NORTH PACIFIC OCEAN

By WILLIS E. HURD

Atmospheric pressure.—The place of lowest average atmospheric pressure on the North Pacific Ocean during April, 1932, was over the central Aleutian Islands (Dutch Harbor, 29.64 inches). The lowest observed pressure of the month, 28.80 inches, occurred at St. Paul, Pribilof Islands, on the 4th. Fewer anticyclones than usual appeared in the Bering Sea, the adjoining Pacific, and in lower Alaskan waters, and pressure was below the average for the month from Dutch Harbor along the eastward and southward coasts to Tatoosh Island, and on the west coast of Mexico.

Over the lower latitudes of the Pacific, as indicated by reports from Honolulu, Midway Island, Guam, and the islands south of Japan proper, pressure was slightly above the normal. The North Pacific anticyclone was for the greater part of April well developed, and except for a few breaks in its continuity from intruding LOWS, mainly from the northward, covered a wide region from the California coast westward into far eastern longitudes.

TABLE 1.—*Averages, departures, and extremes of atmospheric pressure at sea level, North Pacific Ocean and adjacent waters, April, 1932, at selected stations*

Stations	Average pressure	Departure from normal	Highest	Date	Lowest	Date
	Inches	*Inch*	*Inches*		*Inches*	
Point Barrow [1] [2]	30.19	+0.10	30.62	[3] 7	29.68	1
Dutch Harbor [1]	29.64	−0.14	30.22	7	29.02	10
St. Paul [1]	29.67	−0.12	30.18	7	28.80	4
Kodiak [1]	29.67	−0.08	30.24	29	29.04	22
Juneau [4]	29.87	−0.09	30.19	28	29.34	2
Tatoosh Island [4] [5]	29.95	−0.05	30.42	8	29.46	4
San Francisco [4] [5]	30.05	0.00	30.25	8	29.74	20
Mazatlan [1] [2]	29.86	−0.10	29.96	3	29.74	19
Honolulu [4]	30.07	+0.01	30.19	4	29.93	29
Midway Island [1]	30.18	+0.06	30.36	[3] 1	29.92	[3] 18
Guam [1]	29.91	+0.02	30.00	16	29.82	[3] 4
Manila [1]	29.87	−0.03	29.94	17	29.80	4
Naha [1]	29.96	+0.04	30.16	25	29.78	[3] 4
Chichishima [1] [2]	30.01	+0.04	30.18	26	29.80	14
Nemuro [1] [2]	29.85	----------	30.42	17	29.40	5

[1] Data based on 1 daily observation only, with departures computed from best available normals related to time of observation.
[2] Data missing for 1 to 5 days.
[3] And on other date or dates.
[4] A. m. and p. m. observations.
[5] Corrected to 24-hour mean.

Cyclones and gales.—The North Pacific was less subject to severe and widespread storms in April than during any other month since October, 1931, and to the eastward of longitude 180° the only gale of force higher than 9 reported north of the Tropics was a whole gale (force 10) which occurred on the night of the 10th–11th near 50° N., 170° W.

Throughout the Aleutian region LOWS followed each other in rapid succession, some of considerable depth, as in the Bering Sea cyclone of the 4th, when the barometer at St. Paul fell to 28.80 inches, and in the cyclone south of the Peninsula of Alaska on the 20th, with lowest reported pressure, 28.88. The latter storm originated near mid-ocean, where it caused strong northwesterly gales on the 19th in the neighborhood of 35° N., 180°. By noon of the 20th it had advanced to lower Alaskan waters, and on that day and the 21st gave fresh to strong gales over a considerable extent of the northern steamship routes from two to four days out of Seattle.

On the 3d and 4th a moderately deep LOW, secondary to a principal disturbance central over the upper Gulf of Alaska, formed west of the British Columbia and Washington coasts and gave rise to fresh to strong gales north of the forty-fifth parallel, between longitudes 130° and 140° W. Strong gales also occurred in the same latitudes, between 140° and 150° W., on the 5th.

On the 11th and 12th the Aleutian cyclone extended far southward and caused fresh gales on the 12th midway along the Washington-Hawaiian routes. Another extension as a shallow depression far into lower latitudes occurred near the end of the month, but without attendant gales.

As is usually the case, conditions over the western part of the ocean were stormier than over the eastern part. Here the deepening cyclones that originated over the Asiatic continent or in the Yellow and Japan Seas, as well as the LOWS peculiar to the western Aleutians, contributed to produce disturbed weather between the outposts of the Aleutians and Japan. On several days during the early half of April, heavy snowstorms, in some instances accompanied by gales, occurred to the northward of the forty-fifth parallel. The severest gales of the month were experienced west of the date line. On the 10th, near 46° N., 173° E., and on the 14th, near 42° N., 158° E., westerly winds of force 11 were reported, both by the Japanese motorship *Ryoyu Maru*, en route from San Francisco to Yokohama. Other high winds of this general region, some of which were of whole gale force, accompanied by greatly depressed barometer, are sufficiently indicated in the adjoining table.

The Jolo typhoon.—Only one tropical cyclone is known to have occurred on the North Pacific in April this year, and information concerning the storm has thus far been obtainable only through press reports. Low pressure overspread the southern Philippines near the end of the month, and on the 29th a destructive typhoon ravaged Jolo and neighboring small islands. Only three buildings in the town of Jolo escaped damage, and among those razed was the historic Chinese pier, one of the most famous markets in the Philippines. Reports say that 140,000 persons were affected; 100 lost their lives, and at least 50 per cent of the corn and rice crops was ruined. It was the first serious typhoon there since 1904. Early in May it was reported that a disastrous storm—presumably a continuation of the Jolo typhoon—struck the coast of Anam, inflicting considerable loss ot life and property.

Tehuantepecers.—In the Mexican tropics an unusual number of northers for April occurred in the Gulf of Tehuantepec, resulting from anticyclones in the Gulf of Mexico or farther northward. They were reported as of moderate gale force on the 1st and 4th; of fresh to strong gale force on the 12th and 13th, and of force 10 on the 15th. On the last date, also, a fresh northeasterly gale was encountered off the middle Costa Rican coast.

Winds at Honolulu.—The trade winds blew 94 per cent of the month at Honolulu, with the prevailing direction from the east. The maximum velocity was 30 miles an hour from the northeast on the 1st.

Fog.—Fog occurred less frequently over the eastern half of the ocean than during previous months of the year. It was not only rare and widely scattered along the northern sailing routes, but was unusually little in evidence along the central California coast. The spots of greatest frequency, each with five days on which fog was noted, lay over extreme southern California and to the south and west of Cape San Lucas. With the return of spring, fog began to appear along the upper and central routes in east longitudes, although up to the end of April it had not yet assumed any considerable navigational importance.

SEA-SURFACE TEMPERATURE OBSERVATION, APRIL, 1932

By GILES SLOCUM

Table 1 shows the average surface temperatures of the Caribbean Sea and the Straits of Florida for April, 1932. These figures are based upon about 80 per cent of the observations which will eventually become available. They are, therefore, preliminary, rather than final values. The final revised figures, computed from complete data, will be given at a later date.

CARIBBEAN SEA

Surface temperatures in the Caribbean Sea were somewhat closer to the seasonal average in April, 1932, than they were during March. They were, however, higher than normal.

STRAITS OF FLORIDA

Until late in the month, the surface temperatures in the Straits of Florida were in general lower than they had been in March. Then, during the final days of April, they rose sharply to normal values. The month as a whole was a period of unusually low temperature for this time of the year.

TABLE 1.—*Preliminary mean sea-surface temperatures (°F.) in the Caribbean Sea and Straits of Florida, April, 1932*

Quarter	Period	Caribbean Sea			Straits of Florida		
		Mean (°F.)	Departure from 13-year mean (1920-1932)	Change from preceding month	Mean (°F.)	Departure from 13-year mean (1920-1932)	Change from preceding month
I	Apr. 1-7	79.6	+0.5		74.6	−1.3	
II	Apr. 8-15	79.5	+0.2		75.3	−1.4	
III	Apr. 16-22	79.9	+0.4		75.5	−1.2	
IV	Apr. 23-30	80.7	+0.8		72.1	−0.3	
	Month	79.9	+0.4	+0.5	75.6	−1.1	−0.1

CLIMATOLOGICAL TABLES [1]

CONDENSED CLIMATOLOGICAL SUMMARY

In the following table are given for the various sections of the climatological service of the Weather Bureau the monthly average temperature and total rainfall; the stations reporting the highest and lowest temperatures, with dates of occurrence; the stations reporting the greatest and least total precipitation; and other data as indicated by the several headings.

The mean temperature for each section, the highest and lowest temperatures, the average precipitation, and the greatest and least monthly amounts are found by using all trustworthy records available.

The mean departures from normal temperatures and precipitation are based only on records from stations that have 10 or more years of observations. Of course, the number of such records is smaller than the total number of stations.

Condensed climatological summary of temperature and precipitation by sections, April, 1932

[For description of tables and charts, see REVIEW, January, p. 37]

Section	Temperature								Precipitation					
	Section average	Departure from the normal	Monthly extremes						Section average	Departure from the normal	Greatest monthly		Least monthly	
			Station	Highest	Date	Station	Lowest	Date			Station	Amount	Station	Amount
	°F.	°F.		°F.			°F.		In.	In.		In.		In.
Alabama	64.8	+1.2	Thomasville	93	24	2 stations	30	1	3.02	−1.25	Tuscumbia	9.26	Union Springs	0.14
Arizona	59.8	−0.1	Mohawk	105	13	Fort Valley	7	22	0.40	−0.21	Alpine	2.12	13 stations	0.00
Arkansas	63.7	+2.2	Osceola	92	21	Dutton	28	14	2.85	−2.20	Marked Tree	7.02	Cotter	0.71
California	53.5	−1.7	Westhaven	102	10	Twin Lakes	−3	22	1.54	−0.30	Crescent City	11.55	7 stations	0.00
Colorado	45.3	+1.9	Eads	99	13	Dillon	−14	7	1.79	0.00	Telluride	4.42	Del Norte	T.
Florida	69.7	−0.2	2 stations	95	[1] 24	Hillard	34	2	1.27	−1.42	Cottage Hill	4.33	St. Cloud	0.15
Georgia	64.6	+1.1	do	94	24	Blairsville	28	1	1.74	−1.88	Clayton	4.80	Fargo	0.29
Idaho	45.3	+0.3	3 stations	86	[1] 13	Grays Lake	−5	9	1.83	+0.34	Tripod Mountain	4.10	Challis	0.33
Illinois	53.1	+0.8	Greenville	87	2	Lincoln	21	13	1.85	−1.65	Mount Carmel	5.11	Rushville	0.36
Indiana	51.6	−0.3	Edwardsport	86	22	Salamonia	21	13	2.67	−0.89	Kokomo	5.35	Fowler	0.41
Iowa	50.0	+1.2	Logan	84	9	2 stations	21	[1] 1	1.96	−0.93	Washta	5.65	Humboldt	0.44
Kansas	57.5	+3.4	Atwood	92	22	Tribune	18	11	2.21	−0.48	St. Francis	4.24	Smith Center	0.53
Kentucky	56.4	+0.5	2 stations	86	5	Mount Sterling	25	[1] 1	3.83	−0.15	Franklin	8.33	Prestonburg	2.03
Louisiana	68.1	+1.0	3 stations	92	[1] 20	Robeline	35	12	3.45	−1.24	Burrwood	7.77	Natchitoches	0.60
Maryland-Delaware	50.5	−1.9	Keedysville, Md	84	23	Sines, Md	16	14	2.21	−1.36	Crisfield, Md	4.14	Western Port, Md	0.87
Michigan	40.8	−1.8	Gull Lake	83	22	Wolverine	−10	3	1.51	−1.06	Bad Axe	3.29	St. Joseph	0.12
Minnesota	43.1	+0.5	Campbell	84	21	Big Falls	−10	3	1.94	−0.02	Mankato	3.49	Winona	0.95
Mississippi	66.2	+1.6	Waynesboro	94	24	2 stations	35	1	3.32	−1.49	Belzoni	6.24	Aberdeen	1.15
Missouri	57.6	+2.5	Doniphan	95	21	do	22	[1] 1	2.57	−1.24	Caruthersville	5.79	Canton	1.12
Montana	44.7	+2.1	Frazer	84	14	Hebgen Dam	−1	6	1.74	+0.54	Sentinel Butte Pass	4.50	Loweth	0.46
Nebraska	52.4	+3.4	Culbertson	101	20	Harrison	15	26	2.00	−0.45	Hyannis	5.40	Bloomfield	0.43
Nevada	48.3	−0.6	Logandale	96	12	Zorra Vista Ranch	6	7	0.99	+0.20	Lamoille	2.62	2 stations	T.
New England	42.7	−1.0	7 stations	78	[1] 22	Pittsburg, N. H	1	5	2.53	−0.71	Searsburg Mountain, Vt.	4.86	New Bedford Mass	1.00
New Jersey	48.3	−1.1	5 stations	82	[1] 21	2 stations	18	5	2.71	−0.89	Long Branch	4.69	Phillipsburg	1.16
New Mexico	52.2	+0.8	Carlsbad	95	18	Red River	0	7	0.68	−0.31	Des Moines	2.57	8 stations	0.00
New York	41.7	−2.6	Morrisville	88	29	Stillwater Reservoir	1	4	2.42	−0.55	Eagle Falls	4.70	Binghamton	0.97
North Carolina	57.4	−0.5	Goldsboro	92	25	Mount Mitchell	12	13	2.33	−1.16	Tapoco	6.32	Kinston	0.71
North Dakota	44.1	+2.5	Minot	79	17	Pembina	0	3	2.16	+0.77	Napoleon	6.00	Bottineau	0.38
Ohio	48.5	−1.4	Mount Healthy	88	23	2 stations	19	[1] 4	2.29	−0.93	Lake Milton	5.04	Bellefontaine	0.96
Oklahoma	63.1	+2.9	4 stations	91	[1] 2	Goodwell	21	11	2.33	−1.33	Tishomingo	5.48	Stillwater	0.49
Oregon	46.8	−0.2	Oakridge	90	12	2 stations	6	[1] 3	2.65	+0.66	Seaside	8.48	Madras	0.32
Pennsylvania	47.0	−1.7	2 stations	86	22	do	14	[1] 3	1.71	−1.73	Greenville	3.73	Forest City	0.58
South Carolina	62.1	−0.2	3 stations	92	23	Caesar's Head	28	13	2.05	−1.01	Due West	4.23	Summerville	0.23
South Dakota	49.2	+3.5	2 stations	83	[1] 21	Lead	11	26	2.76	+0.77	Harveys Ranch	7.50	Yankton	0.70
Tennessee	59.8	+1.1	Perryville	92	22	Elkmont	23	13	5.04	+0.58	Worsham	8.64	Embreeville	2.48
Texas	67.2	+1.0	New Braunfels	102	25	Muleshoe	21	11	2.50	−0.66	Austwell	8.31	3 stations	0.00
Utah	47.2	+0.3	St. George	88	16	Manila	7	7	1.49	+0.10	Riverdale	4.82	2 stations	T.
Virginia	53.9	−0.8	Chatham	89	3	Mineral	22	10	2.44	−0.88	Saltville	4.79	Lynchburg	1.01
Washington	48.6	+1.1	Wahluke	90	30	Paradise Inn	18	27	3.48	+0.82	Wynoochee Oxbow	14.90	Wapato	0.09
West Virginia	50.9	−0.6	2 stations	88	7	2 stations	18	4	2.21	−1.37	Kayford	4.42	Piedmont	0.57
Wisconsin	42.3	−1.2	Fond du Lac	82	22	do	5	[1] 2	1.49	−1.04	Laona	3.48	Waukesha	0.21
Wyoming	41.2	+1.4	Dull Center (near)	83	14	Riverside	−9	[1] 6	2.02	+0.41	Knowles	7.59	Archer	0.39
Alaska (March)	19.8	+5.0	2 stations	58	[1] 10	Fort Yukon	−48	1	1.03	−0.80	Ketchikan	12.37	5 stations	0.00
Hawaii	71.0	+0.3	do	90	[1] 7	Kanalohuluhulu	47	[1] 17	9.23	+0.64	Puohakamoa (No. 2)	50.00	2 stations	0.00
Puerto Rico	76.2	+1.2	Coloso	98	26	Guineo Reservoir	42	14	4.42	−0.27	Maricao	10.80	Santa Isabel	0.67

[1] Other dates also.